WHAT IS CLAIMED IS:

1. A photoelectric conversion apparatus in which a read unit for amplifying and reading electric charge transferred by a transfer device and a driving unit for driving the transfer means a connected to a two-dimensional sensor two-dimensionally having a plurality of pixels each formed from a combination of a photoelectric conversion element which converts radiation or visible light into an electrical signal and generates electric charge and the transfer device for transferring the electric charge generated by the photoelectric conversion element at an arbitrary timing, comprising

a phototimer detection unit for detecting the radiation or visible light to control exposure of the radiation or visible light,

wherein a common path is used both as a signal transmission path which connects the transfer device to the read unit and a signal transfer path of said phototimer detection unit.

2. A photoelectric conversion apparatus comprising:

a two-dimensional sensor having a plurality of pixels, in the form of a matrix, each formed from a combination of a photoelectric conversion element which converts radiation or visible light into an electrical signal and generating electric charge and a transfer device for transferring the electric charge generated

by the photoelectric conversion element;

a read unit for amplifying and reading the electric charge transferred by the transfer device; and

a phototimer detection unit for detecting the radiation or visible light to control exposure of the radiation or visible light,

wherein a common path is used both as a signal transmission path which connects the transfer device to the read unit and a signal transfer path of said phototimer detection unit.

3. The apparatus according to claim 1, wherein one or a plurality of phototimer detection unit each identical to said phototimer detection unit are provided on the signal transmission path which connects the transfer device to the read unit.

4. The apparatus according to claim 1, wherein said phototimer detection unit is manufactured by substantially the same manufacturing process as that for the photoelectric conversion element or the transfer device.

5. The apparatus according to claim 1, wherein

said photoelectric conversion element has, on an insulating substrate,

a first electrode layer,

a first insulating layer,

a photoelectric conversion semiconductor layer formed from a non-single crystal semiconductor,

a second electrode layer,

an injection blocking layer which is formed between the second electrode layer and the photoelectric conversion semiconductor layer and blocks injection of carriers having a first conductivity type into the photoelectric conversion semiconductor layer, and

a third electrode layer made of a metal, and

the second electrode layer is formed on the injection blocking layer and is transparent to visible light.

6. The apparatus according to claim 1, wherein the photoelectric conversion element includes

an insulating substrate,

a first electrode layer formed on the insulating substrate,

a first insulating layer formed on the first electrode layer,

a photoelectric conversion semiconductor layer formed on the first insulating layer by using a non-single crystal semiconductor,

an injection blocking layer which is formed on the photoelectric conversion semiconductor layer and blocks injection of carriers having a first conductivity type into the photoelectric conversion semiconductor layer,

a second electrode layer which is formed on the

injection blocking layer and transparent to visible light, and

a third electrode layer formed between the second electrode layer and the photoelectric conversion semiconductor layer by using a metal.

7. The apparatus according to claim 1, wherein the photoelectric conversion element includes, on an insulating substrate,

a first electrode layer,

a first injection blocking layer which blocks injection of electric charge having a first conductivity type,

a photoelectric conversion semiconductor layer made of an amorphous semiconductor,

a second injection blocking layer which blocks injection of electric charge having a second conductivity type different in sign from the electric charge of the first conductivity type,

a second electrode layer which is formed on the second injection blocking layer and transparent to visible light, and

a third electrode layer made of a metal.

8. The apparatus according to claim 1, wherein the photoelectric conversion element includes

an insulating substrate,

a first electrode layer formed on the insulating substrate;

a first injection blocking layer which is formed on the first electrode layer and blocks injection of carriers having a first conductivity type,

a photoelectric conversion semiconductor layer formed on the first injection blocking layer by using a non-single semiconductor,

a second injection blocking layer which is formed on the photoelectric conversion semiconductor layer and blocks injection of carriers having a second conductivity type different in sign from the carriers of the first conductivity type,

a second electrode layer which is formed on the second injection blocking layer and transparent to visible light, and

a third electrode which is formed between the second electrode layer and the second injection blocking layer by using a metal.

9. An X-ray imaging apparatus comprising:

a photoelectric conversion apparatus defined in claim 1; and

a phosphor which is bonded on a light-receiving surface of said photoelectric conversion apparatus,

wherein said phosphor converts X-rays into visible light.

10. An X-ray imaging apparatus comprising:

a photoelectric conversion apparatus defined in claim 1;

an electrical signal read unit for reading an electrical signal on the basis of X-rays detected by said phototimer detection unit of said photoelectric conversion apparatus; and

an exposure control unit for determining an exposure from an electrical signal read by said electrical signal read unit, and controls an X-ray source to obtain an image having an optimal contrast.

11. A method of manufacturing a photoelectric conversion apparatus, comprising:

a step of forming a first conductive layer on an insulating substrate, and forming a sensor electrode and a gate electrode by etching the formed first conductive layer;

a step of sequentially forming a first insulating layer and first and second amorphous semiconductor layers on the formed sensor electrode and gate electrode;

a step of etching the first insulating layer and first and second amorphous semiconductor layers formed in a predetermined area on the sensor electrode, forming a second conductive layer on the etched layers, and etching the formed second conductive layer to form a sensor bias line above the sensor electrode and form a source electrode layer, drain electrode layer, and signal line above the gate electrode; and

a step of forming an electrode transparent to

visible light on an area in which the sensor bias line and the second amorphous semiconductor layer are exposed.